

NOTES ON THE GENUS *MATELEA* (APOCYNACEAE S.L.)

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While preparing a revision of *Matelea* subgenus *Dictyanthus*, I included in my studies three species which I now exclude from this subgenus. It seems more appropriate to publish the treatments of these three species here than as part of the revision of the subgenus. One of the species is described as new and one is provided with a new combination. Notes concerning two species of *Matelea* more distantly related to subgenus *Dictyanthus* are also provided.

In referring to the descriptions given here, it will be helpful to make note of certain usages of terminology.

(1) The description of the indumentum has been simplified and, to a certain extent, generalized by the convention of referring to all trichomes as either *short*, *glandular*, or *long* and modifying these terms as appropriate. These trichomes are all uniseriate and multicellular and can have straight or uncinuate tips. Short trichomes are less than 0.1 mm long, typically about 0.05 mm. Glandular trichomes are the same length to slightly shorter than the short trichomes and have a short stalk, an inflated middle, and a short apiculum. The inflated part typically collapses on drying, giving these the appearance of capitate glandular trichomes. Long trichomes are more than 0.1 mm long, typically much more.

(2) The leaves are described essentially according to Hickey (1973). This terminology is likewise employed to describe the shape of the bracts, calyx lobes, and corolla lobe apices. The leaf length has been considered to be the length of the midrib and the leaves are described on the basis of the largest leaf of each specimen examined.

(3) I have considered the corolla lobes to be distinct from the limb. The corolla, then, is composed of the tube, the limb, and the lobes.

(4) Measurements of the pollinia are taken in the normal orientation they assume when removed. The length of the pollen sac is taken from the point of attachment of the corpusculum to the tip, including, therefore, the translator arm or caudicle.

*MATELEA SEPICOLA* W. D. Stevens, sp. nov. Type: *Stevens 1436* (MSC, holotype).

*Matelea sepicola* W. D. Stevens; species insignis corolla parva urceolata (2.5-4.5 mm e basi ad sinum) habenti paginam interiorem glabram et lineas parallelas verticales intra tubum et lobis coronarum crasse laminaribus rhombeis (in aspectu

lateralis) unusquisque adnato corollae secus medium paginae dorsalis et gynostegio a septo tenui adaxiali dignoscenda.

Plants twining vines. Stems essentially herbaceous and lacking bark except with a woody caudex with thick corky bark, with dense short and glandular trichomes and moderately dense to dense, mostly straight long trichomes to 3 mm long. Leaf blade wide-ovate or occasionally ovate or very-wide-ovate, 35-85 (-105) mm long, 23-85 mm wide, indumentum of dense, or occasionally sparse above, uncinete long trichomes, surface pusticulate to minutely pusticulate or occasionally nearly smooth, smaller veins often slightly to sharply raised below, apex acuminate to attenuate, base lobate, lobes convergent to divergent, with 0-3 (-5) acropetiolar glands, margin often slightly thickened and revolute; petiole (19-) 28-72 (-88) mm long, with dense short and glandular trichomes and sparse to dense, mostly uncinete long trichomes. Inflorescence a simple, or more often a compound, condensed, helicoid cyme; primary peduncle mostly 2-4 mm long, but occasionally with an inflorescence branch originating at or near the base of the apparent peduncle (Figure 2B), with dense short and glandular trichomes and moderately dense to very sparse or even absent, straight or uncinete long trichomes; bracts linear to lorate or lanceolate, 1-2 mm long, abaxial surface with dense short and glandular trichomes and moderately dense to dense, straight or uncinete long trichomes, adaxial surface glabrous; pedicel 1.5-3.5 mm long, with indumentum of peduncle. Calyx lobes narrow-ovate, 3-5 mm long, 1.5-2.5 mm wide, apex attenuate, with one gland below each sinus, abaxial surface with sparse to moderately dense uncinete long trichomes, adaxial surface glabrous. Corolla urceolate, base to sinus length 3-5 mm, limb slightly reflexed and slightly revolute; lobes 2.5-4.5 mm long, apex acute to obtuse, slightly reflexed and slightly revolute; glabrous within, indumentum outside of moderately dense straight long trichomes on limb and lobes; tube with a pair of ridges inside opposite each corona lobe; with reddish-brown vertical lines within tube, these becoming circular and reticulated on limb and lobes but partially obscured by the green or greenish-brown background. Corona lobes 1.5-3.0 mm long, shape elaborate but basically thickly laminar and rhombic in lateral view, adnate or tightly connivent along axis to corolla (between ridges) for part of length but tip free above, adnate to gynostegium along axis by a narrow wall, loosely to tightly appressed side to side, lateral tips sometimes slightly thickened, giving a trilobed appearance from above. Gynostegium 1.5-3.0 mm high and 1.5-2.0 mm wide at apex, slightly stipitate, apex broadly and shallowly concave and slightly convex and bilobed in center, corpuscula slightly exceeding convex center, terminal anther appendages covering nearly half of apex. Corpusculum sagittate, 0.20-0.25 mm long, 0.08-0.09 mm wide, pollen sacs obliquely obovate, 0.62-0.72 mm long, 0.34-0.43 mm wide. Follicles fusiform, (44-) 54-74 mm long, 12-20 mm wide, green with white stripes, with dense short trichomes and occasionally very sparse glandular trichomes, with 22-

37 (-48) projections, these thick, straight or arcuate, to 4 mm long. Mature seeds unknown, immature seeds obovate, to 4 mm long, to 3 mm wide, irregularly toothed distally, both sides verrucate to rugose, dark brown; coma to 30 mm long, white. Figures 1 and 2.

The six known collection localities range from southern Sinaloa through Nayarit to Jalisco. Figure 3. The four localities in Nayarit and Sinaloa are apparently at elevations of 30 m or less and the two in Jalisco at about 1300 m. Flowering August-October. Mature-sized fruit collected in September and November and old dehiscent fruit collected in June and September. The known habitats are fencerows, roadsides, and thickets, hence the origin of the epithet.

Woodson recognized this as an undescribed species by his undated annotation "*Matelea* (*Macroscopsis*) n. sp." on *Ferris 550C* at DS, but annotated another collection, *Pringle 5439* at F, as *Matelea reticulata* (Engelmann) Woodson, probably because the label determination was "*Gonolobus reticulatus*, Engelm., (with short peduncles)." *Matelea reticulata* is quite a different species both in morphology (Woodson [1941] placed it in his subgenus "*Eumatelea*") and in range, being found in northeastern Mexico and adjacent United States. As certainly as this species is distinct from *Matelea reticulata*, it also does not belong to the subgenus *Macroscopsis*, even as Woodson conceived it. The six species Woodson referred to subgenus *Macroscopsis* form a highly unnatural assemblage, of which the type element probably deserves generic status. There are at least two other distinct groups represented in the subgenus, but all the other species are probably appropriately placed in the genus *Matelea*. *Matelea sepicola* appears to have closer affinities with subgenus *Dictyanthus* than with any species Woodson included in subgenus *Macroscopsis*. Despite the differences in corolla shape, urceolate rather than campanulate, and the proportionately broader corona lobes, the flowers are much like those of subgenus *Dictyanthus*, especially with respect to the position and mode of adnation of the corona lobes. The vegetative features, including the indumentum, and the nature of the fruit are identical with those of the subgenus *Dictyanthus* and distinct from most of the rest of *Matelea*. Until *Matelea* is better studied, however, I prefer not to assign this species to any of Woodson's subgenera.

SPECIMENS EXAMINED. MEXICO. SINALOA: ca 2.0 mi SW of Hwy 15 along rd to Chametla, ca 5 mi S of Rosario, 10 Sep 1973 (fl & fr), *Stevens 2038* (MSC). NAYARIT: vicinity of San Blas, first hill on old Spanish rd to Tepic, 13 Oct 1925 (fl), *Ferris 550C* (DS, US); Tuxpan, Palapar Redondo [labelled as State of Jalisco], 20 m, 6 Nov 1926 (fr), *Mexia 1060* (UC); Acaponeta, 23-30 June 1897 (fr), *Rose 3122* (US). JALISCO: hills near Tequila, 26 Sep 1893 (fl & fr), *Pringle 5439* (F, MO, US); ca 6.9 mi SW of Hwy 15 along rd to Ameca, near dirt rd leading N, 23 Aug 1971 (fl), *Stevens 1436*,

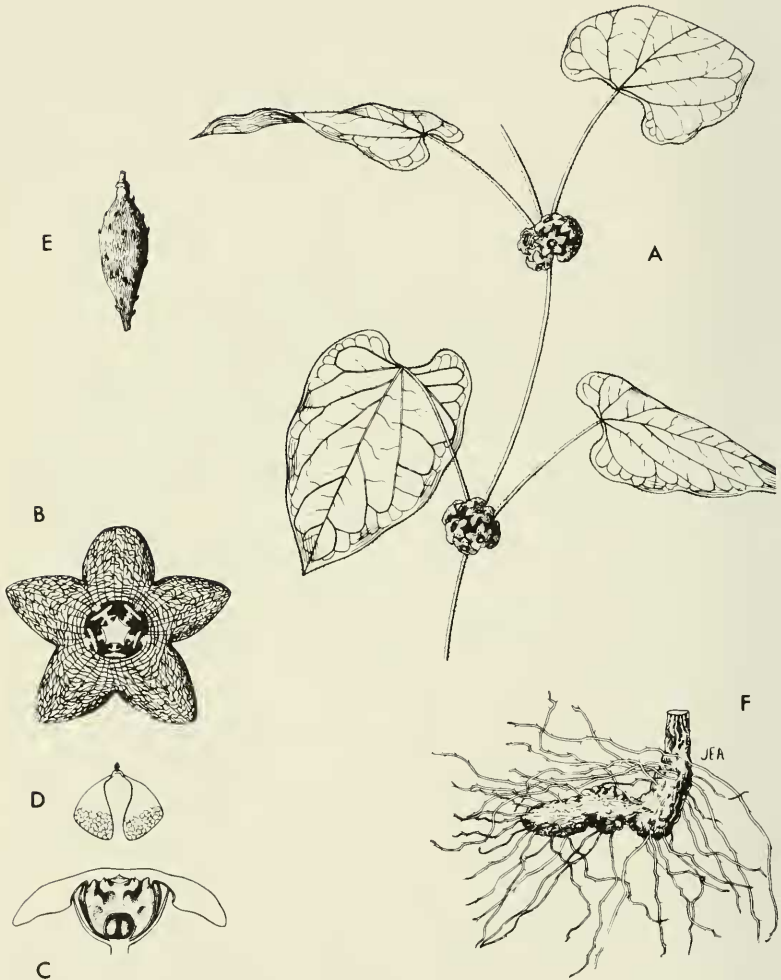


Figure 1. *Matelea sepicola* (drawn from Stevens 1436).  
 A. section of flowering stem, x 0.4; B-C. flowers, x 2.3;  
 D. pollinium, x 16; E. fruit, x 0.4; F. caudex, x 0.4.



Figure 2. *Matelea sepicola*. A. inflorescence, note parallel lines within corolla, *Stevens 1436*; B. inflorescence, note shape and method of adnation of corona lobes, *Stevens 1436*; C. inflorescence, one petiole removed, note inflorescence branch originating near base of apparent peduncle, *Stevens 1895*; immature fruit, *Pringle 5439 (F)*.

type of *Matelea sepicola* (MSC), 2 Sep 1973 (fl), *Stevens 1895* (MSC).

*Matelea altatensis* (Brandege) Woodson, Ann. Missouri Bot. Gard. 28: 236. 1941.

*Gonolobus altatensis* Brandege, Zoe 5: 244. 1908. Type: *Brandege s.n.*, 10 Sep 1904 (UC! holotype; MO, 2 specimens, fragments of holotype!).

Plants twining vines. Stems woody below, with thin to thick corky bark, sometimes with a weakly developed woody caudex with thick corky bark, herbaceous and lacking bark above, with sparse to dense short, glandular, and long trichomes, long trichomes to 3 mm long and mostly straight. Leaf blade wide-ovate or rarely very-wide-ovate, (35-) 45-75 (-87) mm long, (25-) 35-77 mm wide, with sparse glandular trichomes and sparse to occasionally dense, mostly uncinata long trichomes, surface pustulate, especially above, apex acute to attenuate, base lobate, lobes mostly convergent, with (0-) 2-5 acropetiolar glands, margin occasionally somewhat thickened and revolute; petiole 25-52 mm long, with sparse to dense short, glandular, and long trichomes, long trichomes mostly uncinata. Inflorescence a simple, or more often a compound, condensed, helicoid cyme; primary peduncle (15-) 30-135 mm long, with sparse to dense short, glandular, and long trichomes, long trichomes straight or uncinata; bracts linear to lanceolate, 1.5-4.0 mm long, with indumentum of leaves; pedicel (6-) 12-28 mm long, with indumentum of peduncle. Calyx lobes lanceolate to ovate or occasionally elliptic, (2-) 4-6 mm long, 1.5-2.5 mm wide, apex acute to attenuate, with one gland below each sinus, abaxial surface with sparse glandular trichomes and sparse to dense, mostly uncinata long trichomes, adaxial surface glabrous or with scattered glandular trichomes. Corolla shallowly campanulate, nearly rotate, base to sinus length 4-6 mm, limb not distinct, margins slightly or not at all revolute; lobes (2-) 4-7 mm long, apex acute to obtuse or rounded, slightly reflexed, margins slightly revolute; indumentum within of dense short trichomes except glabrous between corona lobes and especially dense around corona lobes and in a line above them, indumentum on outside of glandular and straight long trichomes, occasionally distal half of lobes nearly glabrous; tube convoluted with the raised parts opposite the corona lobes, forming shallow pockets between them, with the corona lobes in distinct pockets in the base of the raised parts; pale greenish-white or sometimes also tinted yellowish, especially at base, with very faint to moderately dark green reticulations, mostly drying pale brown. Corona lobes ca 2 mm long, basically triangular in outline above, appressed side to side, adnate to gynostegium and adherent but not adnate to corolla. Gynostegium ca 2 mm high and ca 2 mm wide at apex, not markedly stipitate, apex flat or slightly convex, with a low ridge from each corpusculum to center, this formed from adjacent margins of terminal anther appendages which nearly



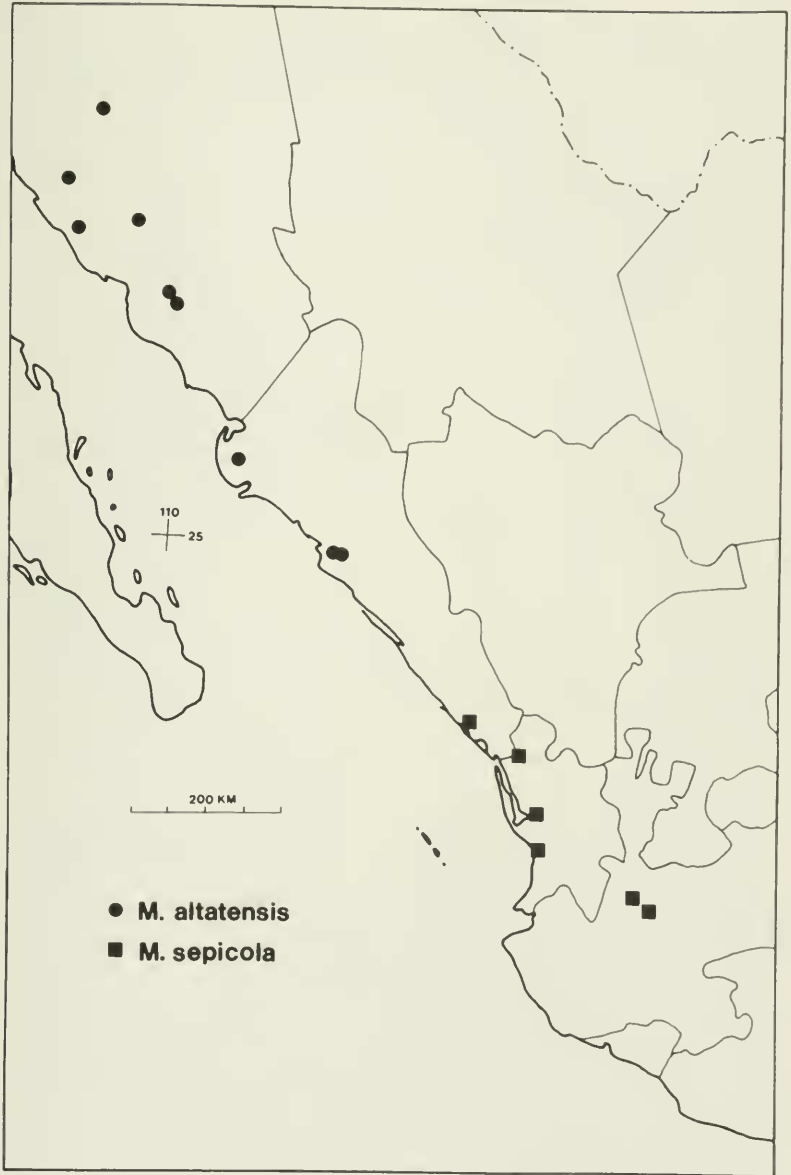


Figure 3.

or completely cover apex. Corpusculum sagittate, 0.20-0.26 mm long, 0.15-0.18 mm wide, pollen sacs obliquely obovate, 0.78-0.88 mm long, 0.28-0.35 mm wide. Follicles fusiform, with a distinct basal flange on one side and apex often long and thin, 60-100 mm long, 13-20 mm wide, striped and mottled light and dark green, glabrous or with sparse short trichomes, with 18-34 (-44) arcuate to hooked projections to 8 mm long. Seeds obovate, 4-5 mm long, ca 2 mm wide, with a raised margin, this coarsely toothed, especially distally, inside this margin slightly convex and sparsely verrucate on one side, the other side slightly concave, verrucate, and with a narrow ridge from apex to near center, dark brown; coma ca 35 mm long, white. Figure 4.

*Matelea altatensis* has been collected from northern Sonora to central Sinaloa, but is to be expected farther south, southern Sinaloa being rather poorly collected. Figure 3. Most of the collections have been on the coastal plain at elevations of less than 50 m, but the northernmost localities are more inland and apparently up to about 500 m. This species is found in dry thorn forests in heavy clay soils or occasionally in sandy washes. Flowering specimens have been collected from late July to mid-September and the two collections with nearly mature fruit were made in September and the one specimen with completely mature fruit was made in February.

Only two of the 12 collections of this species have been made since the 1940's and it is probably not at all common. Particularly with the increased development of irrigation systems, the coastal plains of this part of Mexico are rapidly being cleared for agricultural purposes, especially for growing cotton. Suitable habitats for *Matelea altatensis* are already difficult to find near highways.

Although Woodson (1941) included this species in his subgenus *Dictyanthus*, it lacks the major character that has been used to distinguish this group, the adnation of the digitate corona lobes to the corolla. The corona lobes of this species (in shape, size, and position) are much like those of *Matelea tuberosa* and *M. hemsleyana*, but in these species the corona lobes are adnate for their full length to the corolla. The corona lobes of *M. altatensis* are appressed to or perhaps even connivent with the corolla and it may be a small step to complete the adnation. Three other characters can more readily be used to distinguish this species from subgenus *Dictyanthus*. 1) This is the only species either included in or closely related to the subgenus in which the terminal anther appendages essentially cover the style apex. In dried flowers these appendages often shrink somewhat, leaving an uncovered spot in the center of the style apex, but because of the drying, become bright white and easily observable (Figure 4D). In fresh flowers the appendages are translucent and more difficult to see. 2) Also unique is the distinct basal



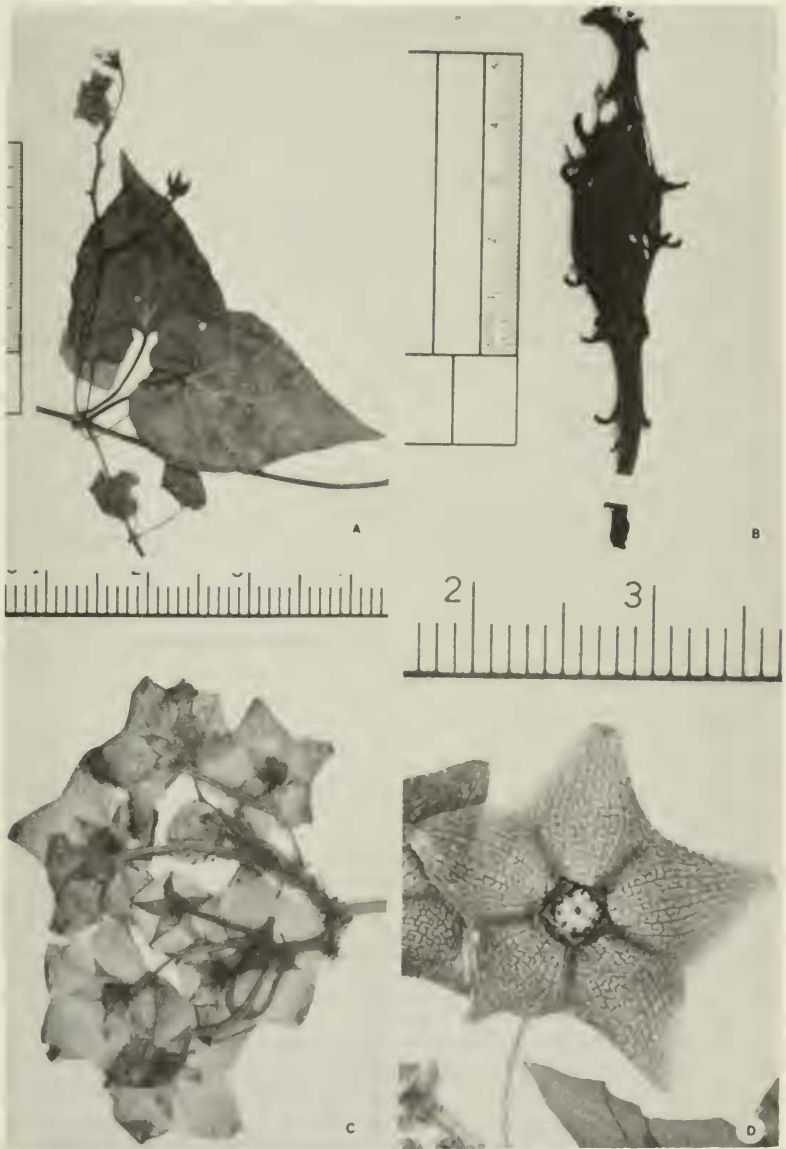


Figure 4. *Matelea altatensis*. A. old inflorescence, Stevens 2062; B. fruit, Wiggins & Rollins 259 (MO); C. inflorescence, Wiggins & Rollins 140 (ARIZ); D. flower, Wiggins & Rollins 140 (A).

flange on one side of the follicle (Figure 4B). 3) This species differs from those I have included in subgenus *Dicthyanthus*, but compares with a few species closely related to the subgenus in having an inflorescence which is, or at least can become, a compound rather than a simple cyme. Again I prefer not to assign this species to any of the existing subgenera.

Within the geographic range of *Matelea altatensis*, there are two somewhat more distantly related species of *Matelea* which could be confused with it in fruiting condition. *Matelea pringlei*, which may actually be restricted to Baja California, differs in having longer, thinner, and straight rather than arcuate projections and lacks a basal flange. *Matelea caudata* differs in having shorter and thicker follicles and again lacks the basal flange. *Matelea caudata* also tends to be shrubby rather than viney.

SPECIMENS EXAMINED. MEXICO. SONORA: Torres, 6 Feb 1903 (fr), Coville 1627 (US); 0.2 mi N of Km marker 2231 and ca 0.2 mi N of side rd to Querobabi, Hwy 15, 28 July 1969 (fl), Mason 2895 (ARIZ, CAS, NY); Bacum Station, near Río Yaquí, 30-40 m, 7 Sep 1935 (fl), Pennell 20207 (GH, MICH, NY, PH, US); ca 2.2 mi NE of Hwy 15, ca 6.9 mi SE of Ciudad Obregon, 12 Sep 1973 (fl & fr), Stevens 2062 (MSC); 27 mi W of Hermosillo on rd to Kino Bay, 720 ft, 28 Aug 1941 (fl), Wiggins & Rollins 140 (A, ARIZ, DS, MO, ND, NY, TEX, UC, US); 5 mi N of Suhuoral, 18 mi W of El Camino Nacional (Hermosillo-Guaymas), 3 Sep 1941 (fl & fr), Wiggins & Rollins 259 (A, ARIZ, DS, MO, 2 specimens, ND, NY, UC, US). SINALOA: vicinity of Culiacan, Yerba Buena, 10 Sep 1904 (fl), Brandegee s.n., type of *Gonolobus altatensis* (MO, 2 specimens, fragments of UC specimen, UC); Culiacan, 17 Sep 1904 (fl), Brandegee s.n. (POM); Culiacan and vicinity, volcanic cerro and valley, 150-500 ft, Sep 1944 (fl), Gentry 7065 (GH); Maraton, 12 mi W of Culiacan, 100 ft, 21 Sep 1944 (fl), Gentry 7086 (GH, MICH, NY); Los Mochis, July 1912 (fl), Tays s.n. (US). STATE UNKNOWN: without locality and date (fl), Sessé, Mociño, et al. 1301 (F, fragment, MA, not seen, photo from F neg. 41451 at MSC), 3570 (F, fragment, MA, not seen, photo from F neg. 41452 at MSC).

*MATELEA ASPERA* (Miller) W. D. Stevens, comb. nov.

*Cynanchum asperum* Miller, Gard. Dict., ed. 8, no. 6. 1768.

Type: *Houstoun* s.n. (BM, not seen, holotype, photos from BH neg. 5251 at MICH! & US!).

*Gonolobus littoralis* Decaisne in deCandolle, Prodr. 8: 596.

1844. Type: *Galeotti* 1545 (P! holotype; G! isotype; F, fragment of G isotype! photo from F neg. 26924 of G isotype at MO!).

*Vincetoxicum littorale* (Decaisne in deCandolle) Standley, Contr. U.S. Natl. Herb. 23: 1188. 1924.

*Vincetoxicum megacarpum* Brandegee, Univ. Calif. Publ. Bot.

4: 381. 1913. Type: *Purpus* 6014 (UC! holotype; F! G, 2

- specimens, 1 a fragment of F specimen! GH! MO, 3 specimens, 2 are fragments, probably of UC specimen! NY! P! (isotypes).
- Matelea megacarpa* (Brandege) Woodson, Ann. Missouri Bot. Gard. 28: 236. 1941.
- Pachystelma cordatum* Brandege, Univ. Calif. Publ. Bot. 7: 330. 1920. Lectotype: *Purpus 8508* [UC no. 204968, not *Purpus 8008* of protologue] (UC! lectotype, mixed with sterile *Matelea* sp.).
- Dictyanthus brachistanthus* Standley, Publ. Field Columbian Mus., Bot. Ser. 8: 38. 1930. Lectotype: *Heyde & Lux ex J. D. Smith 6346* (F! lectotype, mixed with a sterile, probably apocynaceous, vine, photo from F neg. 51447 at F!; G! GH, mixed collection! K! MO! NY! US, 2 specimens, 1 a mixed collection! isolectotypes).

Plants twining vines. Stems woody and with thick corky bark below, at least at the base, herbaceous and lacking bark above, with dense short and glandular trichomes and dense to essentially absent, mostly straight, long trichomes to 2 mm long. Leaf blade ovate to wide-ovate or occasionally narrow-ovate or very-wide ovate, 31-98 (-122) mm long, 18-75 (-102) mm wide, indumentum above of sparse to moderately dense uncinete long trichomes and short trichomes on major veins, indumentum below of moderately dense to dense uncinete long trichomes, surface pustulate to smooth, smaller veins slightly raised below or not, apex acuminate to attenuate, base lobate, lobes convergent to widely divergent, with 2-8 acropetiolar glands, margin often slightly thickened and revolute; petiole 15-70 mm long, with dense short and glandular trichomes and dense to essentially absent, mostly uncinete long trichomes. Inflorescence a simple, or more often a compound, condensed, helicoid cyme; primary peduncle 3-31 (-65) mm long, with dense short and glandular trichomes and dense to essentially absent, straight or uncinete long trichomes; bracts linear to lanceolate or lorate, 2-5 (-6) mm long, abaxial surface with dense short and straight or uncinete long trichomes, adaxial surface with sparse short trichomes or glabrous; pedicel 5-13 mm long, with indumentum of peduncle. Calyx lobes lanceolate to narrow-ovate or rarely ovate, (3.5-) 5-10 mm long, (1-) 2.0-3.5 (-4) mm wide, apex attenuate, with one or occasionally two glands below each sinus, abaxial surface with sparse to dense straight or uncinete long trichomes, surface often pustulate, adaxial surface glabrous. Corolla shallowly campanulate, nearly rotate, base to sinus length 4-9 (-11) mm, limb broad, hardly distinct from short tube, margin slightly revolute; lobes 3.5-8.0 mm long, apex rounded or occasionally acute or obtuse, plane to somewhat reflexed, margin slightly revolute; indumentum within of dense, very small short trichomes except glabrous at base between corona lobes and especially dense in lines above corona lobes, glabrous outside or with sparse to moderately dense short and sparse straight long trichomes on distal part of limb and base of lobes, with shallow pockets alternate with corona lobes;

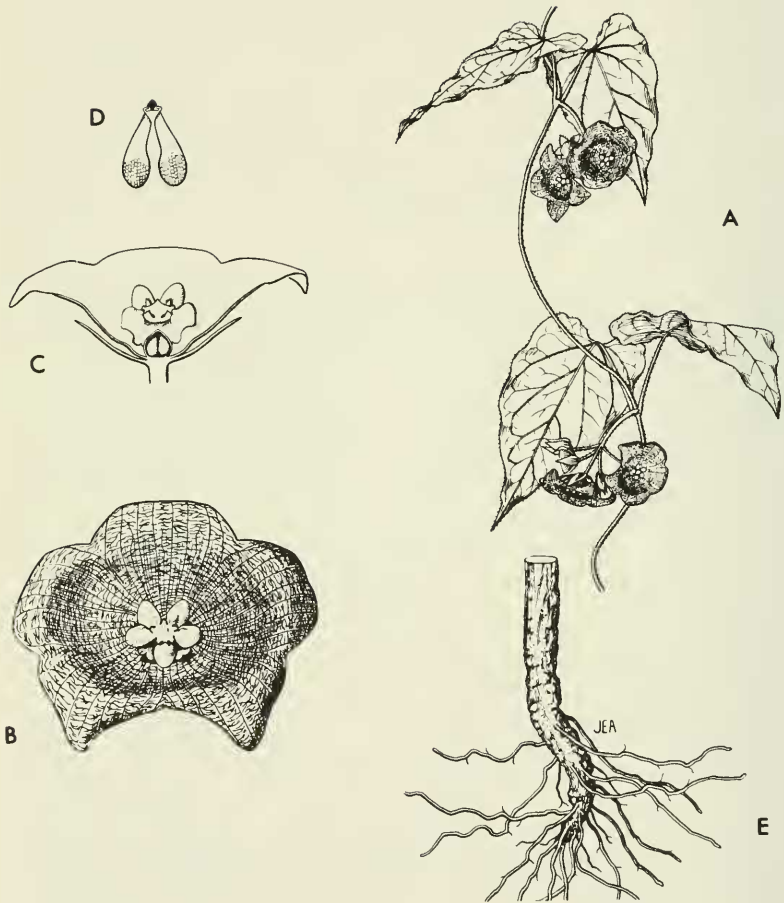


Figure 5. *Matelea aspera* (drawn from Stevens 1296). A. section of flowering stem, x 0.4; B-C. flowers, x 1.6; D. pollinium, x 12; E. base of stem, x 0.8.

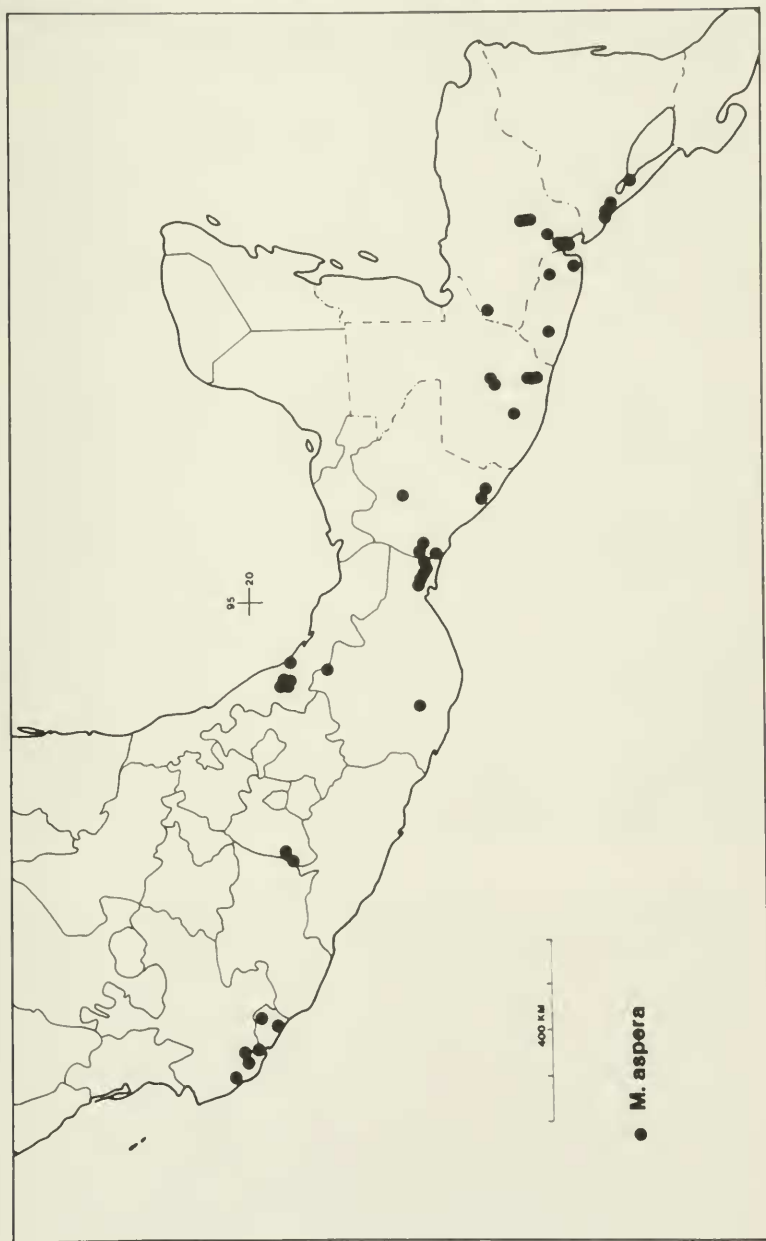


Figure 6.

background color very pale green (drying cream-white) to deep brownish-green, reticulations from essentially absent on the palest backgrounds to dense on the darker backgrounds, reticulations purple to brownish-purple. Corona lobes (1.5-) 2-3 (-4) mm long, ovate in outline from above, inflated, with a small tooth on the inner surface, lower half adnate to the corolla, free above, adnate to base of gynostegium, connate at base and forming a fleshy disc partially distinct from the lobes. Gynostegium (1.5-) 2-3 (-3.5) mm high and (1.5-) 2-3 mm wide at apex, slightly and shortly stipitate, anther wings prominent, apex essentially flat, terminal anther appendages covering ca half of apex. Corpusculum sagittate, 0.23-0.29 mm long, 0.20-0.26 mm wide, pollen sacs obliquely obovate, 0.89-1.04 mm long, 0.34-0.43 mm wide. Follicles fusiform, 62-87 (-113) mm long, 12-18 (-27) mm wide, apparently dark purplish-red or nearly black when mature but drying to lighter colors, with moderately dense to dense short trichomes, with 18-34 (-46) projections, these straight or slightly arcuate, mostly thick and blunt, to 5 or rarely even 7 mm long. Seeds obovate, 4-5 mm long, 2.0-3.5 mm wide, with a raised, radially-grooved margin, this entire or irregularly toothed, especially distally, one side convex and shallowly to deeply verrucate to rugose, other side concave and deeply rugose, with a shallow ridge from apex to near center, dark brown; coma 25-30 mm long, white. Figure 5.

Occurring from Jalisco and Colima southeastward to central Nicaragua. Figure 6. The areas where this species has been collected are rather widely spaced northwest of the Isthmus of Tehuantepec but are more continuous southeastward. Found from sea level to about 1000 m. Tolerant of a variety of substrates, including limestone-derived soils and beach sands, and a variety of communities, including pine forest at the highest elevations, but most commonly collected in disturbed thorn forests with clay soils. Flowering mostly June-October. Mature-sized fruit collected July-March.

*Matelea aspera* has a greater geographic range than most species of *Matelea* and is quite variable in appearance. Most of the variation, however, is in the size and coloration of the corolla. There is nearly a three-fold difference in the range of the corolla sizes; the largest-flowered specimens are found in the Pacific coastal lowlands of the Isthmus of Tehuantepec, and the plants from the mountains of Chiapas southeastward are rather uniformly small-flowered. Corolla color varies considerable, even within populations, but the palest corollas with faint or no reticulations are all found on Mexican plants and again the plants from the mountains of Chiapas southeastward are rather uniformly dark-colored. The northwestern part of the range tends also to have more substantially woody plants while plants in the southeastern part of the range tend to perennate from near ground level. Most of the other characters



of the species have less well-marked regional variation, and the corona, in particular, appears to be remarkably uniform throughout the range.

This is the type species of Woodson's (1941) *Matelea* subgenus *Pachystelma*. The previous two species, *Matelea sepicola* and *M. altatensis*, could be loosely allied with *M. aspera*, but the other two species Woodson included in the subgenus appear to be more distantly related. I am reluctant to add *M. sepicola* and *M. altatensis* to subgenus *Pachystelma* primarily because all of these species have clear affinities with subgenus *Matelea* sect. "*Reticulatae*" and subgenus *Heliosterma*. An adequate assessment of the subgenera of *Matelea* must await careful studies of more of the constituent species.

The type of *Cynanchum asperum* is apparently from a specimen cultivated by Miller from seeds sent from Veracruz by Houstoun in about 1730. I have seen only photographs of the holotype, but Dr. Garrett E. Crow compared the specimen, at BM, with samples of my material and confirmed its identity.

Through an apparent printer's error, the protologue of *Pachystelma cordatum* gives the type collection as *Purpus 8008*, but the UC accession number given corresponds to the marked type specimen, *Purpus 8508*. Unfortunately, *Purpus 8508* is a mixed collection. The majority of the sheet is *Matelea aspera*, but there is a sterile shoot and an isolated leaf of a second species of *Matelea*. The sterile specimen apparently did not influence the type description and I have therefore chosen the fertile element as the lectotype. It is interesting to note that even the fertile element has only very immature flower buds; this might explain why Brandegee failed to recognize that his new genus and species were the same as *Vincetoxicum megacarpum*, which he had described seven years earlier from another *Purpus* collection from a nearby locality.

In the case of the mixed collection of *Dictyanthus brachistanthus*, it appears that Standley based the vegetative aspects of the description on the sterile, probably apocynaceous, vine and based the description of the inflorescence and flowers on the element representing *Matelea aspera*. The name could probably be rejected on the basis of Article 70 of the International Code of Botanical Nomenclature (Stafleu et al., 1972), but on the basis of Standley's apparent intent, I have chosen to follow Article 9 and designate the fertile element as a lectotype.

SPECIMENS EXAMINED. MEXICO. JALISCO: steep ravines in gorge of Río Cihuatlán, below bridge 13 mi N of Santiago, Colima, 175-200 m, 3 July 1957 (fl), *McVaugh 15941* (MICH, 2 specimens); mountains 3 mi above (S of) La Huerta, rd to Barra de Navidad, 500-550 m, 3 Oct 1960 (fl & fr), *McVaugh 19805* (MICH, 2 speci-

mens); near new rd ca 25 km NW of Río San Nicolás and 20 km SE of Tomatlán, 90-150 m, 11-12 Dec 1970 (fr), *McVaugh 25314* (MICH, MSC); 0.5 mi N of La Resolana, 22 mi SSW of Autlán, ca 1000 ft, 11 Aug 1949 (fl), *Wilbur & Wilbur 2253* (MICH). COLIMA: Paso del Río, Nov 1906 (fr), *Emrick 224* (F); Colima, Aug 1897 (fl), *Palmer 164* (MICH, US). MEXICO: Dist. Temascaltepec, Bejucos, 610 m, 26 Aug 1932 (fl), *Hinton 1476* (GH, US); Dist. Temascaltepec, Chorrera, 7 Mar 1934 (fr), *Hinton 5741* (K), 19 Aug 1935 (fl), *Hinton 8189* (K, US). VERACRUZ: "dunes de Vera Cruz," June-Oct 1840 (fl), *Galeotti 1545*, type of *Conolobus littoralis* (F, fragment of G specimen, G, photos from F neg. 26924 of G specimen at MO & P); "E. Vera Cruz," 1730 (fl), *Houstoun s.n.*, type of *Cynanchum asperum* (BM, not seen, photos from BH neg. 5251 at MICH & US); vicinity of Palmar, ca 3200 ft, 3 Sep 1935 (fl), *MacDaniels 452* (F); Baños del Carrizal, Aug 1912 (fl), *Purpus 6014*, type of *Vincetoxicum megacarpum* (F, G, 2 specimens, 1 a fragment of F specimen, GH, MO, 3 specimens, 2 are fragments, probably of UC specimen, NY, P, UC); Acaxónica, Aug 1919 (fl), *Purpus 8508*, lectotype of *Pachystelma cordatum* (UC, mixed with sterile *Matelea* sp.); ca 4.5 mi W of Palmilla along hwy through Huatusco, 10 Aug 1971 (fl), *Stevens 1406* (MSC). OAXACA: on Hwy 190, 1.5 mi SE of Niltepec, ca 50 m, 11 July 1972 (fl), *Denton 1776* (MICH, MSC, WTU); 9 mi W of Zanatepec [Zanatepec], 17 Aug 1971 (fl), *Dwyer et al. 755* (MO); 5 mi E of Temascal (10 mi W of Veracruz border), ca 45 ft, 25 Oct 1963 (fr), *Janzen s.n.* (MICH); along Hwy 190, 2 km S of Niltepec, 50 m or less, 17 July 1959 (fl), *King 1726* (TEX), *1752* (TEX), *1755* (MICH, NY, TEX, US); along Hwy 190, 2 km E of Zanatepec, 50 m or less, 21 July 1959 (fl), *King 1892* (MICH, NY, TEX, UC, US); Santa Efigenia, 500 ft, 18 July 1895 (fl), *Nelson 2824* (GH); 70 km (by rd) SE of Pinotepa Nacional on rd to Puerto Escondido, ca 150 m, 23 July 1965 (fl), *Roe et al. 521* (WIS); near bridge ca 4.0 mi SE of Zanatepec on Hwy 190, 21 July 1971 (fl), *Stevens 1296* (MSC); along Hwy 131 ca 3.6 mi N of river bridge near Juchatenango, 27 July 1971 (fl), *Stevens 1363* (MSC). CHIAPAS: slopes on bank of Río Lagas 4 mi SW of Soyala [?Soyaló] along rd to Pan American Hwy, 3400 ft, 26 July 1964 (fl), *Breedlove 6557* (DS, F, MICH, US); slopes S of Tapanatepec, near Oaxaca-Chiapas state line, 200 ft, 25 Aug 1967 (fl), *Clarke 462* (DS); Miramar, 11 Aug 1937 (fl), *Matuda 1624* (MEXU, MICH, 2 specimens, MO, NY); Aguas Calientes, Escuintla, 21 June 1947 (fl), *Matuda 16628* (F, MO); Jalapa, Triunfo, Escuintla, 900 m, 10 July 1948 (fl & fr), *Matuda 18103* (F); Playa Cintalapa, Escuintla, 2 June 1949 (fl), *Matuda 18657* (F); Valley of Jiquipilas, 2200-2800 ft, 16-18 Aug 1895 (fl), *Nelson 2937* (US, mixed with *Matelea quirosii*); plains near Monserrate, July 1925 (fl), *Purpus 10232* (US); rocky plains, Monserrate, June [?1930] (fl), *Purpus 10615* (UC); Monserrate, June [?1930] (fl), *Purpus 10638* [in part] (US); rocky plains, Monserrate, June-July [?1930] (fl), *Purpus 10638* [in part] (UC). STATE UNKNOWN: without locality and date (fl), *Sessé, Mociño, et al. 1300* (F, fragment, MA, not seen, photo from F neg. 41465 at MSC), *8568* (MA, not seen, photo from F neg. 41466

at MSC). GUATEMALA. EL PROGRESO: along rd between San Gerónimo and Morazán, near Baja Verapaz line, 1000 m, 9 Oct 1942 (fl), *Steyermark 52133* (F, MO). GUATEMALA: 10 km NE of Motúfar, rdside, 15 July 1970 (fl), *Harmon & Dwyer 3066* (UMO). QUICHE: without precise locality, 1942 (fl), *Ignacio A. 1363* (F). SANTA ROSA: plains of Llano Entero, SE of Chiquimulilla, ca 150 m, 30 Nov 1940 (fr), *Standley 78852* (F); region of La Morenita, NE of Chiquimulilla, ca 400 m, 1 Dec 1940 (fl), *Standley 78871* (F); along Avellana rd, S of Guazacapán, ca 150 m, 6 Dec 1940 (fr), *Standley 79422* (F). SOLOLA: Atitlán, 600 m, Feb 1894 (fl), *Heyde & Lux ex J. D. Smith 6346*, lectotype of *Dictyanthus brachistanthus* (F, mixed with a sterile, probably apocynaceous, vine, photo from F neg. 51447 of F specimen at F, G, GH, mixed collection, MO, NY, US, 2 specimens, 1 a mixed collection). EL SALVADOR. MORAZAN: along ditch to reservoir, Monte Cristo, 9 Dec 1941 (fl), *Tucker 497* (UC). SAN MIGUEL: NW of Hacienda Potrero Santo, ca 0.1-0.8 km, S side of Lake Olomega, 13° 17' N, 88° 04' W, ca 60 m, 2 Feb 1942 (fr), *Tucker 881* (UC). SAN SALVADOR: San Salvador, 1922 (fl), *Calderón 781* (US). DEPARTMENT UNKNOWN: between San Sabastián and Aculhuaca, 1922 (fl), *Calderón 1182* (US). HONDURAS. CHOLUTECA: vicinity of Pespire, 160-200 m, 18-27 Oct 1950 (fl), *Standley 27100* (F), 18-27 Oct 1950 (fr), *Standley 27181* (F). COPAN: along Copán river between Sta. Rita and Jaral, 700 m, 21 Aug 1971 (fl), *Molina R. 26209* (F, US). EL PARAISO: drainage of Río Yeguaré (ca 87° W, 14° N), entre Mata Indio y Lizapa, 950 m, 25 July 1951 (fl), *Molina R. 4065* (F, GH, US). MORAZAN: drainage of Río Yeguaré (ca 87° W, 14° N), Yeguaré River, 2600 ft, 16 July 1948 (fl), *Glassman 1919* (F, ILL, MIN, NY); drainage of Río Yeguaré (ca 87° W, 14° N), along Jicarito Creek, near Jicarito, 950 m, 13 Aug 1947 (fl), *Molina R. 481* (F); vicinity of El Zamorano, 780-900 m, 3-17 Aug 1947 (fl), *Standley 11593* (F), *11648* (F), *11726* (F); above El Zamorano, rd from Jicarito toward El Pedregal, ca 875 m, 14 Aug 1947 (fl), *Standley 12236* (F); vicinity of El Zamorano, ca 800 m, 6 Oct 1948 (fl), *Standley 12878* (F); near Santa Clara, valley of Río Yeguaré, E of El Zamorano, ca 850 m, 19 Oct 1948 (fl), *Standley 13187* (F); trail from La Quince, El Zamorano, to El Jicarito, 800-900 m, 15 July 1949 (fl), *Standley 21286* (F); near El Jicarito, along rd toward El Pedregal, ca 900 m, 24 July 1949 (fl), *Standley 21637* (F); vicinity of El Zamorano, 800-850 m, 26 July 1949 (fl), *Standley 21736* (F); region of Río de Orilla, SE of El Zamorano, 900-950 m, 11 Aug 1949 (fl), *Standley 22446* (F, GH); along Quebrada El Gallo above El Jicarito, 900-1000 m, 12 Aug 1949 (fl), *Standley 22517* (F); vicinity of El Zamorano, 800-850 m, 16 Aug 1949 (fl), *Standley 22886* (F); along rd from El Zamorano toward Chagüite, ca 800 m, 5 Aug 1950 (fl), *Standley 26279* (F, GH, US); mountains above El Jicarito, 950 m, 21 Aug 1951 (fl), *Standley 28638* (US); Camino Sn. Antonio, 850 m, 21 Oct 1943 (fl), *Valerio R. 1345* (F, MO); vicinity of El Zamorano, along rd to Chagüite, ca 2200 ft, 23 July 1962 (fl & fr), *Webster et al. 12523* (MO); drainage of Río Yeguaré (ca 87° W, 14° N), ca

3 km E of Chagüite, 850 m, 25 Sep 1949 (fl), *Williams 16873* (F, GH). VALLE: Salamar Beach, 2 km E of San Lorenzo, Fonseca Gulf, 0 m, 3 Oct 1968 (fl), *Molina R. & Molina 22762* (DS, F, G, 2 specimens, MO, NY); San Lorenzo, 20 m, 13 Sep 1945 (fl), *Valerio R. 3473* (F, 2 specimens, GH, MO); lower slopes of El Tigre volcano, above Ampala [Isla El Tigre], 50 m, 16 Sep 1935 (fl), *West 3537* (GH). NICARAGUA. GRANADA: "Grenade de Nicaragua," Autumn 1869 (fl), *Lévy 1071* (P). LEON: Volcán Santa Clara near Hwy 26 [Volcán Rota?], 600 m, 19 July 1970 (fl), *Davidse & Pohl 2407* (MSC). CHINANDEGA: Ameya, near sea level, 19-21 June 1923 (fl), *Maxon 7159* (US); vicinity of Chichigalpa, ca 90 m, 12-18 July 1947 (fl), *Standley 11217* (F), *11395* (F), *11474* (F), *11526* (F). DEPARTMENT UNKNOWN: "Leoncia 2.," 16 Oct 1927 (fl), *Chaves [Chávez] 325* (US).

*Matelea prosthecidiscus* Woodson, Ann. Missouri Bot. Gard. 28: 223. 1941.

*Prosthecidiscus guatemalensis* J. D. Smith, Bot. Gaz. (Crawfordsville) 25: 150, pl. 12. 1898, non *Matelea guatemalensis* (K. Schumann) Woodson. Type: *Heyde & Lux ex J. D. Smith 3845* (US! holotype).

Heretofore this peculiar species has been definitely known only from Guatemala and Nicaragua and its mature fruits were unknown (cf. Standley & Williams, 1969). A number of fruiting collections from Mexico appeared to be similar, but it was not until I had grown to flowering two Mexican collections (from seeds of *McVaugh 24439* and *McVaugh 25388*), and later collected flowering material myself, that I was able to confirm that they were conspecific with the type material. Because this significantly amplifies the known range of the species, I have provided a list of specimen citations.

Woodson (1941) included this species in his subgenus *Ibatia*, but I can find little justification, other than in the shape of the pollinia, for this disposition. Although I believe that certain elements of Woodson's concept of *Matelea*, especially his subgenus *Pherotrichis* and the type element of his subgenus *Macroscepis*, warrant generic status, I am tentatively willing to accept that this is a proper species of *Matelea*, but probably standing apart from any of Woodson's subgenera. There is little point, however, in formally proposing additional infrageneric taxa until this most complex genus is better understood.

SPECIMENS EXAMINED. MEXICO. JALISCO: steep mountain ravines, near hwy to Autlán, 9-10 rd mi N of Bahía Navidad (2-5 mi above edge of coastal plain), 350-400 m, 10 Nov 1960 (fr), *McVaugh 20945* (MICH); steep mountainsides 2.5-4 mi above (N of) La Cuesta, rd to Talpa de Allende, 800-1000 m, 20-21 Nov 1960 (fr), *McVaugh 21196* (MICH); steep hillsides ca 12-13 km SW of Pihuamo, 500-600 m, 19 Nov 1970 (fr), *McVaugh 24439* (MICH, 2 specimens,

MSC); Mpio. de Cabo Corrientes, steep rocky valley of Río las Juntas, 10-13 km SE of Tuito, 250-330 m, 14-16 Dec 1970 (fr), *McVaugh 25388* (MICH, MSC); along Hwy 110 ca 5.0 mi NE of Río Tuxpan bridge and ca 2.0 mi NE of Huizache, steep hills SE of hwy, 28 Aug 1973 (fl), *Stevens 1811* (MSC). GUERRERO: Dist. Mina, Cutzamala, 28 Jan 1935 (fr), *Hinton 7290* (US); La Correa, 50 m, 2 Oct 1898 (fr), *Langlassé 398* (US). OAXACA: Dist. Jamiltepec, de Río Verde a Jamiltepec, 50 m, 4 Dec 1921 (fr), *Conzatti 4395* (US). CHIAPAS: Jilguero, Escuintla, 250 m, 7 Nov 1949 (fr), *Matuda 18702* (F). GUATEMALA. HUEHUETENANGO: Paso del Boquerón, along Río Trapichillo, below La Libertad, 1200-1300 m, 21 Aug 1942 (fl), *Steyermark 51149* (F). SANTA ROSA: Cerro Gordo [2.5 leagues NW of Cenaguilla, according to type description], 360 m, Sep 1892 (fl), *Heyde & Lux ex J. D. Smith 3845*, type of *Prosthecidiscus guatemalensis* (US). EL SALVADOR. AHUACHAPAN: vicinity of Ahuachapán, 800-1000 m, 9-27 Jan 1922 (fr), *Standley 19216* (US). NICARAGUA. MANAGUA: Managua, 16 Oct 1927 (fr), *Chaves [Chávez] 348* (F, US).

*Matelea congesta* (Decaisne in deCandolle) Woodson, Ann. Missouri Bot. Gard. 28: 224. 1941.

*Gonolobus congestus* Decaisne in deCandolle, Prodr. 8: 597. 1844. Type: *Galeotti 1528* (P, not seen, holotype).

*Vincetoxicum congestum* (Decaisne in deCandolle) Standley, Contr. U. S. Natl. Herb. 23: 1189. 1924.

Woodson (1941) placed this species in his subgenus *Macroscepis*. As noted above, subgenus *Macroscepis* is a heterogeneous group. This species would seem to be more appropriately placed in subgenus *Chthamalia*. Since most of the available material has been examined, I am including a list of the specimens.

SPECIMENS EXAMINED. MEXICO. NAYARIT: mountains 10 mi SE of Ahuacatlán, on rd to Barranca del Oro, slopes S of divide, 1100-1300 m, 11-12 Aug 1959 (fl), *Feddema 385* (MICH); near hwy 12 mi SE of Tepic, nearly S of Cerro Sangangüey, ca 1000 m, 16-18 Aug 1959 (fl), *Feddema 554* (MICH); slopes and barrancas leading down to lake NE of Santa María del Oro, ca 1000 m, 18-20 Aug 1959 (fl), *Feddema 661* (MICH); ca 10 mi SE of Ahuacatlán along rd to Barranca del Oro, 26 Aug 1971 (fl), *Stevens 1462* (MSC). JALISCO: Mpio. de Zapopan, Río Blanco, barranca, 1460 m, 5 Aug 1967 (fl), *Díaz Luna 302* (MICH); steep rocky hills 2 mi NW of Tequila, 1200 m, 3 Sep 1960 (fl), *McVaugh 18628* (MICH); barranca near Guadalajara, 11 Sep 1890 (fl), *Pringle 3569* (F, GH); near Guadalajara, 25 Aug 1893 (fl), *Pringle 4489* (ENCB, F, G, 2 specimens, GH, K, MICH, MSC, PH, UC, US), 9 Aug 1902 (fl), *Pringle s.n.* (US). MICHOACAN: lower N-facing slopes of Cerro Santa María, 8-10 km SW of Jiquilpan and 5 km NE of Quitupan, Jalisco, ca 2000 m, 5-7 Aug 1959 (fl), *Feddema 92* (MICH); Mpio. Apatzingan, above Acahuato, 3200 ft, 17 Aug 1941 (fl), *Leavenworth & Hoogstraal 1683* (F). MEXICO: Dist. Temascaltepec, Tejupilco, 1340 m, date not given (fr), *Hinton 5060* (K). GUERRERO: Dist. Montes de Oca, Vallecitos,

20 Sep 1937 (fl), *Hinton 11394* (F, GH, US); near Tierra Colorada, 16 Aug 1947 (fl), *Rowell et al. 17M763* (F, TEX). OAXACA: Pacific slopes of Sierra Madre del Sur, along rd to Puerto Angel (Mex. Hwy 175), 16 mi S of San Miguel Suchixtepec, 1550 m, 16 July 1968 (fl), *Anderson & Anderson 4813* (MICH); Santa Ana Cuyamecalco, 5500 ft, 15 Aug 1895 (fl), *Smith 617* (GH); ca 4.9 mi SW of Sola de Vega along Hwy 131, 26 July 1971 (fl), *Stevens 1348* (MSC).

The problems associated with Sessé and Mociño collections have been greatly lessened by Dr. Rogers McVaugh's unpublished notes on the subject and by reference to the Field Museum photographs of the Sessé and Mociño herbarium, kindly made available to me by Dr. McVaugh and Dr. Lorin I. Nevling, Jr., respectively. I am also indebted to the curators of the cited herbaria for allowing me to examine their material. Field work for my studies has been aided by a grant from the Latin American Studies Center, Michigan State University, and by the University of Michigan Herbarium. Figures 1 and 5 were prepared by Judy Appenzeller, supported by NSF Grant GJ-573. Dr. Richard Harris, University of Michigan, kindly reviewed my Latin diagnosis. Dr. John H. Beaman has been continuously helpful in reviewing various aspects of my work.

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